SPECIFICATIONS FOR WORK

SPECIAL PROVISIONS

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1. PROJECT DESCRIPTION

The Project involves construction work associated with Weigh Station Fishing Access Site (FAS) Site Improvements, Fish, Wildlife & Parks (FWP) project # 7113705, located in Missoula County, MT as identified in the project drawings. The project generally includes new parking area and access road construction involving clearing and grubbing, excavation/embankment construction, gravel base course and surfacing, conserved topsoil placement, boat ramp development, fence installation, and incidentals.

2. PROJECT RELATED CONTACTS

Project contacts are designated as follows:

Owner:	Montana FWP 1420 E. Sixth Ave. PO Box 200701 Helena, MT 59620-0701	**Project Representative:**	Mark McNearney FWP Project Manager 600 N. Park Ave. Helena, MT 59620-0701 406-841-4009 (wk) 406-431-4033 (cell) 406-841-4004 (fax)

3. SITE INSPECTION

All Bidders should satisfy themselves as to the construction conditions by personal examination of the site described in this document. Bidders are encouraged to make any investigation necessary to assess the nature of the construction and the difficulties to be encountered.

4. SOILS INFORMATION

Geotechnical investigation work has not been done for this Project. It is the responsibility of the Contractor to conduct all investigations and determine the soil type and digging conditions that may be encountered with this Project prior to bid preparation.

5. PROJECT REPRESENTATIVEING, INSPECTIONS, AND TESTING

The Contractor's work will be periodically tested and observed to insure compliance with the Contract Documents. Complete payment will not be made until the Contractor has demonstrated that the work is complete and has been performed as required. If the Project Representative detects a discrepancy between the work and the requirements of the Contract Documents at any time, up to and including final inspection, such work will not be completely paid for until the Contractor has corrected the deficiency.

The Project Representative will periodically monitor the construction of work to determine if the work is being performed in accordance with the contract requirements. The Project Representative does not have the authority or means to control the Contractor's methods of construction. It is, therefore, the Contractor's responsibility to utilize all methods, equipment, manpower, and other means necessary to assure that the work is installed in compliance with the Drawings and Specifica-

tions, and laws and regulations applicable to the work. Any discrepancies noted shall be brought to the Contractor's attention, who shall immediately correct the discrepancy. Failure of the Project Representative to detect a discrepancy will not relieve the Contractor of his ultimate responsibility to perform the work as required.

The Contractor shall inspect the work as it is being performed. Any deviation from the Contract requirements shall be immediately corrected. Prior to any scheduled observation by the Project Representative, the Contractor shall again inspect the work and certify to the Project Representative that he has inspected the work and it meets the requirements of the Contract Documents. All buried work items shall be inspected by the Project Representative prior to backfilling, or may not be considered for payment.

The work will be subject to review by the Project Representative. The results of all such observations shall be directed to the Contractor only through the Project Representative.

5.1 Services Provided by the Contractor. The Contractor shall provide the following services:

a. Any field surveys to establish locations, elevations, and alignments as stipulated on the Plans. FWP reserves the right to set preliminary construction staking for the project. The Contractor is responsible to notify FWP for any construction staking discrepancies.

b. Preparation and certification of all required shop drawings and submittals as described in the General Conditions.

c. All tests requiring the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to the Project Representative. The laboratory shall be staffed with experienced technicians properly equipped, and fully qualified to perform the tests in accordance with the specified standards.

f. The Contractor shall provide the Project Representative with a written schedule indicating dates for specific testing and inspection services to be performed. The schedule shall be updated as required to give the Project Representative at least one week's advance notice. The Contractor shall notify the Project Representative immediately of any change or shall be subject to pay Project Representativeing fees as herein defined.

5.2 Services Provided by the Owner. The Owner shall provide the following services at no cost to the Contractor except as required for retests as defined in the Contract Documents.

a. The Project Representative may check compaction of backfill and surfacing courses using Proctor information supplied by the Contractor. These tests are to determine if compaction requirements are being fulfilled in accordance with the Contract Documents. It is ultimately the responsibility of the Contractor to insure that this level of compaction is constant and met in all locations.

6. ENGINEERING INTERPRETATIONS

Timely Engineering decisions on construction activities or results have an important bearing on the Contractor's schedule. When engineering interpretation affects a plan design or specifications change, it should be realized that more than 24 hours may be required to gain the necessary Owner participation in the decision process including time for formal change order preparation as required.

7. REJECTED WORK

Any defective work or nonconforming materials or equipment that may be discovered at any time prior to the expiration of the warranty period, shall be removed and replaced with work or materials which shall conform to the provisions of the Contract Documents. Any material condemned or rejected shall be removed at once from the project site. Failure on the part of the Project Representative to condemn or reject bad or inferior work or to note nonconforming materials or equipment on the Contractors submittals shall not be construed to imply acceptance of such work. The Owner shall reserve and retain all its rights and remedies at law against the Contractor and its Surety for correction of any and all latent defects discovered after the guarantee period.

The Project Representative will have the authority to reject work which does not conform to the Contract Documents and will provide the Owner with a list of defective work and nonconforming materials or equipment. The Owner will then promptly provide the Contractor with the list of defective work on nonconforming materials or equipment.

8. UTILITIES

The exact locations of existing underground utilities that may conflict with the work are not precisely known. It shall be the Contractor's responsibility to contact the owners of the respective utilities and arrange for field location services. **One Call Locators, 1-800-424-5555**

8.1 Notification. The Contractor shall contact, in writing, all public and private utility companies that may have utilities that may be encountered during excavation. The notification includes the following information:

a. The nature of the work that the Contractor will be performing.
b. The time, date and location that the Contractor will be performing work that may conflict with the utility.
c. The nature of work that the utility will be required to perform such as moving a power pole, supporting a pole or underground cable, etc.
d. Requests for field location and identification of utilities.

A copy of the letter of notification shall be provided to the Project Representative. During the course of construction, the Contractor shall keep the utility companies notified of any change in schedule or nature of work that differs from the original

notification.

8.2 Identification. All utilities that may conflict with the work shall be the Contractor's responsibility to locate before any excavation is performed. Field markings provided by the utilities shall be preserved by the Contractor until actual excavation commences. All utility locations on the Drawings should be considered approximate and should be verified in the field by the Contractor. The Contractor shall also be responsible for locating all utilities that are not located on the Drawings.

8.3 Removal or Relocation of Utilities. All electric power, street lighting, gas, telephone, and television utilities that require relocation will be the responsibility of the utility owner. A request for extending the specified contract time will be considered if utility owners cause delays.

8.4 Public Utilities. Water, sewer, storm drainage, and other utilities owned and operated by the public entities shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All such work shall be in accordance with these Specifications, or the Owner's Standard Specifications or written instructions when the work involved is not covered by these Specifications.

8.5 Other Utilities. Utilities owned and operated by private individuals, railroads, school districts, associations, or other entities not covered in these Special Provisions shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All work shall be in accordance with the utility owner's directions, or by methods recognized as being the standard of the industry when directions are not given by the owner of the utility.

8.6 Damage to Utilities and Private Property. The Contractor shall protect all utilities and private property and shall be solely responsible for any damage resulting from his construction activities. The Contractor shall hold the Owner and Project Representative harmless from all actions resulting from his failure to properly protect utilities and private property. All damage to utilities shall be repaired at the Contractor's expense to the full satisfaction of the owner of the damaged utility or property. The Contractor shall provide the Owner with a letter from the owner of the damaged utility or property stating that it has been repaired to the utility owner's full satisfaction.

8.7 Structures. The Contractor shall exercise every precaution to prevent damage to existing buildings or structures in the vicinity of his work. In the event of such damages, he shall repair them to the satisfaction of the owner of the damaged structure at no cost to the Owner.

8.8 Overhead Utilities. The Contractor shall use extreme caution to avoid a conflict, contact, or damage to overhead utilities, such as power lines, streetlights, telephone

lines, television lines, poles, or other appurtenances during the course of construction of this project.

8.9 Buried Gas Lines. The Contractor shall provide some means of overhead support for buried gas lines exposed during trenching to prevent rupture in case of trench caving.

8.10 Pavement Removal. Where trench excavation or structure excavation requires the removal of curb and gutter, concrete sidewalks, or asphalt or concrete pavement, the pavement or concrete shall be cut in a straight line parallel to the edge of the excavation by use of a spade-bitted air hammer, concrete saw, colter wheel, or similar approved equipment to obtain a straight, square clean break. Pavement cuts shall be 2 feet wider than the actual trench opening.

8.11 Survey Markers and Monuments. The Contractor shall use every care and precaution to protect and not disturb any survey marker or monuments, such as those that might be located at lot or block corners, property pins, intersection of street monuments or addition line demarcation. Such protection includes markings with flagged high lath and close supervision. No monuments shall be disturbed without prior approval of the Project Representative. Any survey marker or monument disturbed by the Contractor during the construction of the project shall be replaced at no cost to the Owner by a licensed land surveyor.

8.12 Temporary Utilities. The Contractor shall provide all temporary electrical, lighting, telephone, heating, cooling, ventilating, water, sanitary, fire protection, and other utilities and services necessary for the performance of the work. All fees, charges, and other costs associated therewith shall be paid for by the Contractor.

The Contract Plans may show utility locations based on limited field observation and information provided to the Project Representative by others. **The Project Representative cannot guarantee their accuracy.** The Contractor shall immediately notify the Project Representative of any discrepancies with utility locations as shown on the Contract Drawings and/or their bury depths that may in any way affect the intent of construction as scoped in these specifications.

There will be no separate payment for exploratory excavation required to locate underground utilities.

9. CONSTRUCTION SAFETY

The Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees) and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable federal, state, county, and local laws, ordinances, codes, and regulations. Where any of these are in conflict, the more

stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth therein.

10. CONSTRUCTION LIMITS AND AREAS OF DISTURBANCE

10.1 Construction Limits. Where construction easements or property lines, are not specifically called out on the Plan Drawings, limit the construction disturbance to 10 feet when measured from the edge of the slope stake grading, or to the adjacent property line, whichever is less. Disturbance and equipment access beyond this limit is not allowed without the written approval of both the Project Representative and the owner of the affected property. If so approved, disturbance beyond construction limits shall meet all requirements imposed by the landowner; this includes existing roads used and/or improved as well as the construction of new access roads. Special construction, reclamation, or post-construction road ripping or other closure provisions required by the landowner on access roads beyond the construction limits shall be performed by the Contractor at no additional cost to the Owner.

10.2 Areas of Disturbances. Approved areas of disturbance are those areas disturbed by construction activities within the construction limits and along designated or approved access routes. Such areas may require reclamation and revegetation operations, including grading to the original contours, top soiling with salvaged or imported topsoil, seeding, fertilizing, and mulching as specified herein. Other areas that are disturbed by the Contractor's activities outside of the limits noted above will be considered as site damage or unapproved areas of disturbance subject to Repair and Replacement Quality as specified in the General Conditions. This includes areas selected by the Contractor outside the defined construction limits for mobilization, offices, equipment, or material storage.

11. PROTECTION OF ADJACENT IMPROVMENTS

Retain and protect all adjacent improvements not called for removal on the drawings. Restore all damaged items to pre-existing condition.

12. TREE PROTECTION AND PRESERVATION

The Contractor and the Owner shall individually inspect all trees within the project construction limits prior to construction. The Owner shall determine which trees are to be removed and which trees are to be preserved. Construction of the grading, utilities and various roadway facilities must not, in the opinion of the Project Representative, significantly damage the trees root system or hinder it's chances for survival. Reasonable variations from the plans, as determined by the Project Representative, may be employed to ensure the survival of trees.

13. CONSTRUCTION SURVEYS

The Contractor will be responsible for all layout and construction staking utilizing the Project Representative's existing control and coordinate data for the project. Dimensions and elevations indicated in layout of work shall be verified by the Contractor. Discrepancies between

Drawings, Specifications, and existing conditions shall be referred to the Project Representative for adjustment before work is performed. The Project Representative may set location and grade stakes prior to construction; however, it is ultimately the responsibility of the Contractor to check and verify all construction staking for the project.

Existing survey control (horizontal and vertical) has been set for use in the design and ultimately the construction of these improvements. A listing of the coordinates and vertical elevation for each of these control points may be included in the project drawings.

The Contractor will be responsible for preserving and protecting the survey control until proper referencing by the Contractor has been completed. Any survey control obliterated, removed, or otherwise lost during construction will be replaced at the Contractor's expense.

Contractor shall be aware of property pins and survey monuments. Damage to these pins will require replacement of such by a registered land surveyor at no cost to the owner.

The Contractor is responsible for the location and elevation of all the construction contemplated by the Contract Documents.

The Contractor shall provide construction staking from the Owner's layouts and the control points. Contractor's construction staking includes at a minimum:

1. Slope stakes located at critical points as determined by the Project Representative.
2. Blue tops every longitudinally and transversely for subgrade and crushed base to verify finish grading of course.
3. Location and grade stakes for drainage features and retaining walls.
4. Location stakes for roadside safety items, permanent and temporary traffic control, and misc. items as determined by the Project Representative.

Prior to commencing work, the Contractor shall carefully compare and check all drawings, each with the other that in any way affects the location or elevation of the work to be executed by him, and should any discrepancy be found, he shall immediately report the same to the Project Representative for verification and adjustment. Any duplication of work made necessary by failure or neglect on his part to comply with this function shall be done at his sole expense.

Original field notes, computations and other records take by the Contractor for the purpose of quantity and progress surveys shall be furnished promptly to the Project Representative and shall be used to the extent necessary in determining the proper amount of payment due to the Contractor.

These field notes, computations and other records shall be neat and orderly. Field notes shall be complete and in a standard format approved by the Project Representative. Unless waived in each specific case, all quantity surveys made by the Contractor shall be made under the direct supervision of the Project Representative.

14. MATERIAL SOURCES AND CONSTRUCTION WATER

The Contractor shall be responsible for locating all necessary material sources, including aggregates, earthen borrow and water necessary to complete the work. The Contractor shall be responsible for meeting all transportation and environmental regulations as well as paying any royalties. The Contractor shall provide the Project Representative with written approvals of landowners from whom materials are to be obtained prior to approval.

The Contractor may use materials from any source, providing the materials have been tested through representative samples and will meet the Specifications.

Water for compaction efforts shall be supplied by the Contractor.

15. MATERIALS SALVAGE AND DISPOSAL

If the Owner requests to salvage material removed from the project, notify the Owner within 24 hours prior to delivery at a specific location approved by the Owner.

Haul and waste all excavated material to a legal site and obey all state, county, and local disposal restrictions and regulations.

16. STORED MATERIALS

Contractor shall use an approved storage area for materials. Materials and/or equipment purchased by the Contractor may be paid for on a monthly basis providing invoices for said materials and equipment are presented to the Project Representative, and such materials have been approved through the submittal process are stored and insured.

17. STAGING AND STOCKPILING AREA

Contractor shall use staging and stockpiling sites for temporary traffic control devices and equipment as approved by the Owner. Contract drawings may show approved staging and stockpiling locations. Notify Owner within 24 hours for approval of staging and stockpiling sites not shown on the contract drawings.

18. SECURITY

The Contractor shall provide all security measures necessary to assure the protection of equipment, materials in storage, completed work, and the project in general.

19. CLEANUP

Cleanup for each item of work shall be fully completed and accepted before the item is considered final. If the Contractor fails to perform cleanup within a timely manner the Owner reserves the right to shut down construction activities.

20. ACCESS DURING CONSTRUCTION

Provide access to all public and private roadways and approaches along the project throughout the construction period.

21. CONSTRUCTION TRAFFIC CONTROL

The contractor is responsible for providing safe construction and work zones within the project limits by implementing the rules, regulations, and practices of the Manual on Uniform Traffic Control Devices, current edition.

22. SANITARY FACILITIES

On-site toilet facilities for employees of Contractor and Subcontractors shall be provided and maintained in a sanitary condition.

23. RECORD DRAWINGS

The Contractor's Superintendent shall maintain at the project site, a "Record Set of Drawings" showing field changes, as-built elevations, unusual conditions encountered during construction, and such other data as required to provide the Owner with an accurate "as constructed" set of record drawings. The Contractor shall furnish the "Record Set" to the Project Representative following the Final Inspection of the Project.

The Contractor's final estimate and final payment will not be processed until the "Record Set" of drawings are received and approved by the Project Representative.

24. PROPOSAL ITEM DESCRIPTIONS AND ESTIMATED QUANTITIES

BASE BID

1. Mobilization/Demobilization/Erosion Control BMP's:
   * Description: This bid item includes all equipment, labor and associated work necessary for the transporting of equipment to and from the work site to construct the project to the lines and grades as noted in the specifications and drawings. This bid item also includes the installation, maintenance, and post-construction removal of temporary and/or permanent erosion control devices and Best Management Practices (BMP's) as designated in the specifications and project drawings or as directed by the Project Representative.
   * Estimated Quantity:
   - 750 linear feet (Sediment retention, erosion control straw wattle)

2. Floating Turbidity Curtain:

* Description: This bid item includes all equipment, labor and associated work for the installation and placement of a floating turbidity curtain to the lines and grades as noted in the specifications and drawings.
* Estimated Quantity:
  - 50 linear feet

3. Excavation and Embankment:
   * Description: This bid item includes all equipment, labor and associated work for the excavation, transporting on-site or imported excavation for embankment-in-place, compacting, and disposal of excess material encountered within the construction limits necessary to construct the parking area to the lines and grades as noted in the specifications and drawings.
   * Estimated Quantity:
     - Excavation – 1,900 cubic yards (includes 200 cubic yards of conserved topsoil), waste area available on site
     - Embankment – 0 cubic yards

4. 1 ½ ” Minus Crushed Base Course, 8” Depth:
   * Description: This bid item includes all equipment, labor and associated work for the placement, grading, and compaction of crushed base course material to the lines and grades as noted in the specifications and drawings.
   * Estimated Quantity:
     - 860 cubic yards (3,870 square yards)

5. Cast-in-Place Concrete ADA Parking Slab:
   * Description: This bid item includes all equipment, labor and associated work for the installation and placement of cast-in-place concrete ADA parking slab to the lines and grades as noted in the specifications and drawings.
   * Estimated Quantity:
     - 810 square feet (includes thickened edge)
     - 10 cubic yards compacted 1 ½” minus gravel

6. Cast-in-Place Concrete Sidewalk:
   * Description: This bid item includes all equipment, labor and associated work for the installation and placement of cast-in-place concrete sidewalk to the lines and grades as noted in the specifications and drawings.
   * Estimated Quantity:
     - 45 square feet
     - 0.5 cubic yards compacted 1 ½” minus gravel

7. Cast-In-Place Concrete Boat Ramp:
   * Description: This bid item includes all equipment, labor and associated work for the installation and placement of a push-in slab concrete ramp to the lines and grades as noted in the specifications and drawings.
   * Estimated Quantity:

- 880 square feet (includes thickened edge)
- 11 cubic yards compacted gravel leveling course
- 8 cubic yards drain rock w/70 square yards of geotextile fabric

8. Pre-Cast Concrete Cable Mat Boat Ramp:
   * Description: This bid item includes all equipment, labor and associated work for the installation and placement of a concrete cable matboat ramp to the lines and grades as noted in the specifications and drawings.
   * Estimated Quantity:
     - 360 square feet (concrete blocks)
     - 40 square yards (geotextile fabric)
     - 5 cubic yards compacted gravel leveling course

9. Concrete Curb Stops:
   * Description: This bid item includes all equipment, labor and associated work for the installation and placement of pre-cast concrete curb stops to the lines and grades as noted in the specifications and drawings.
   * Estimated Quantity:
     - 31 each

10. Single Post Sign Installation (FWP supplied sign panels):
    * Description: This bid item includes all equipment, labor and associated work for the installation and placement of sign posts and panels to the lines and grades as noted in the specifications and drawings. FWP will supply all sign panels for the project.
    * Estimated Quantity:
      - 4 each

11. Double Post Sign Installation (FWP supplied sign panels):
    * Description: This bid item includes all equipment, labor and associated work for the installation and placement of sign posts and panels to the lines and grades as noted in the specifications and drawings. FWP will supply all sign panels for the project.
    * Estimated Quantity:
      - 2 each

12. New Rail Fence:
    * Description: This bid item includes all equipment, labor and associated work for the installation of a new rail fence to the lines and grades as noted in the specifications and drawings.
    * Estimated Quantity:
      - 250 linear feet

13. Revegetation:
    * Description: This bid item includes all equipment, labor and associated work for

revegetation including conserved topsoil placement, fertilizing, seeding, and mulching as noted in the specifications and drawings.

14. Latrine Installation (Owner Furnished):
    * Description: This bid item includes all equipment, labor and associated work for latrine installation (Owner furnished) including excavation, preparation, backfilling, and grading as noted in the specifications and drawings.

ADDITIVE ALTERNATE BID #1

1. FWP Administrative Site Improvements:
    * Description: This bid item includes all equipment, labor and associated work for minor grading and the installation and placement of crushed base course material to the lines and grades as noted in the specifications and drawings.
    * Estimated Quantity:
        - 135 cubic yards (605 square yards) compacted 1 ½" minus gravel

SPECIFICATIONS FOR WORK

TECHNICAL PROVISIONS

Incorporation of Montana Public Works Technical Specifications.

The Technical Specifications as found in Montana Public Works Standard Specifications (MPWSS), Sixth Edition, April 2010 and/or current Addendums or Revisions; are hereby incorporated by reference and made a part of this Contract:

Incorporation of Montana Fish, Wildlife & Parks Technical Specifications and Modifications to MPW Technical Specifications.

In addition to the MPWSS Technical Specifications are the following Montana Fish, Wildlife & Parks Technical Specifications (modifications to MPWSS Technical Specifications).

SECTION 01050 -	Field Engineering
SECTION 01450 -	Mobilization/Demobilization
SECTION 01750 -	Final Cleanup
SECTION 01800 -	Erosion and Sediment Control
SECTION 01801 -	Floating Turbidity Curtain
SECTION 02110 -	Geotextiles
SECTION 02112 -	Removal of Existing Pavement, Concrete Curb, Sidewalk, Driveway and/or Structures
SECTION 02230 -	Street Excavation, Backfill, and Compaction
SECTION 02235 -	Crushed Base Course
SECTION 02236 -	Gravel Leveling Course
SECTION 02238 -	Drain Rock
SECTION 02820 -	Wooden Rail Fence
SECTION 02910 -	Revegetation
SECTION 02930 -	Signing
SECTION 03310 -	Structural Concrete
SECTION 03321 -	Curb Stops
SECTION 03350 -	Concrete Cable Mat
SECTION 99999 -	Pre-Cast Concrete Vault Latrine

SECTION 01050

FIELD ENGINEERING

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 3 EXECUTION

1.1 CONSTRUCTION SURVEY

A. Perform all survey, staking, recording of data, and calculations as necessary to construct the project from the initial layout to final completion. Reset stakes as many times as necessary to construct the work.

B. Set slope stakes and grade stakes at 50' intervals on tangent sections and at 25' on horizontal curves. Set slope stakes at PC and PT locations as well as the begin and end of project stationing. Limit grade stake tolerances to +/-0.3'.

PART 4 MEASUREMENT AND PAYMENT

Add the following:

A. Construction Surveying is incidental to the work and no separate payment is made for this item.

END OF SECTION 01050

SECTION 01450

MOBILIZATION/DEMOBILIZATION

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This item shall consist of the prepatory work and operations necessary performed by the Contractor for the movement of personnel, equipment, supplies, and incidentals to and from the work site. The work includes those actions necessary for obtaining necessary permits required for mobilization; for the establishment of all offices and facilities necessary to work on the project; for premiums on contract bonds; for insurance for the contract; and for other work on the various items on the project site. Mobilization costs for subcontracted work shall be considered to be included.

B. Contractor's cost for administration, bonding, insurance, and site documents shall be included in mobilization and shall not be paid as a separate item.

C. All equipment moved to the project sites shall be in good mechanical condition and free of fuel, oil, lubrication, or other fuel leaks. The Contractor shall immediately remove any equipment potentially or actually discharging environmentally damaging fluids.

D. All equipment moved to the project sites shall be thoroughly cleaned before it is brought to the sites to prevent the introduction of weed seeds. Equipment removed fro the sites may not be returned to the sites again until it is thoroughly cleaned again.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. There will be no direct measurement of this item.

4.2 PAYMENT

B. Partial payments for mobilization/demobilization will be made based on the lump sum bid price as follows:

- 25% of the amount bid for mobilization/demobilization when the Contractor has moved on-site and begun construction activities.
- 50% of the amount bid for mobilization/demobilization when 25% of the contract amount (exclusive mobilization/demobilization) has been completed.
- 75% of the amount bid for mobilization/demobilization when 50% of the contract amount (exclusive mobilization/demobilization) has been completed.
- 100% of the amount bid for mobilization/demobilization when 75% of the contract amount (exclusive mobilization/demobilization) has been completed.

END OF SECTION 01450

SECTION 01750

FINAL CLEANUP

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of final cleanup of the project site prior to final acceptance.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CONTRACTOR RESPONSIBILITES

The contractor shall be responsible for final clean up at the end of the project to a level satisfactory to the owner. All construction debris, no mater how small, shall be collected and removed from the site. All wheel ruts shall be filled in and be leveled to match the adjacent grade and material. Re-seeding or re-sodding, or other re-surfacing may be necessary to repair any construction related impacts or damage.

All survey markings, stakes, temporary paint marks, flagging and other devices shall be removed regardless of who installed them. All excess pavement, concrete, gravel, soil, or other construction materials not intended for permanent use shall be removed.

All final slopes shall be dressed manually to remove woody debris, accumulated trash and oversized material. Any new slope or topsoil surfaces shall be hand raked to provide a uniform appearance. The contractor shall dress all gravel, pavement and concrete edges to eliminate abrupt edges and provide a smooth transition. All construction related temporary sediment control devices shall be removed as soon as practical.

PART 4 MEASUREMENT AND PAYMENT

4.1 PAYMENT

Unless specifically noted otherwise, all final cleanup work shall be incidental to other work items in the contract and no separate payment shall be made.

END OF SECTION 01750

SECTION 01800

EROSION AND SEDIMENT CONTROL

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing, constructing, and maintaining permanent and temporary erosion control and sediment control measures as shown on the project drawings and/or project related construction permits.

PART 2 PRODUCTS

2.1 GENERAL

A. Temporary and erosion control products utilized include but are not limited to backfill material; berms; brush barriers; erosion control blankets, bales, wattles, logs, rolls; erosion control culvert pipe; detention basins; fertilizer; geotextile; mulch; plastic lining; riprap; sandbags; seed; silt fence; and water.

2.2 EROSION CONTROL WATTLES

A. Where designated, provide a sediment retention product made from straw and coconut fiber reinforced with a 100% bio-degradable netting. Use wood stakes to secure sediment retention product in place, spacing per the manufacturer's recommendations. An acceptable product is *Sediment Stop*, manufactured by *North American Green*, or approved equal.

2.2 EROSION CONTROL BLANKETS

A. Where designated, provide a sediment retention product made from straw and coconut fiber reinforced with a 100% bio-degradable netting. Use wood stakes to secure sediment retention product in place, spacing per the manufacturer's recommendations. An acceptable product is *BioNet® S150BN™*, manufactured by *North American Green*, or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Provide permanent and temporary erosion control measures to minimize erosion and sedimentation during and after construction according to the contract erosion control plan, environmental permits, and as directed by the Project Representative. These erosion control measures shall be designed, implemented, and maintained by the

Contractor in accordance with Best Management Practices (BMPs) to control erosion and sediment release from the work site.

B. Install permanent and temporary erosion control measures according to the Storm Water Pollution Prevention Plan (SWPPP), if applicable, approved construction permits, and erosion control drawings.

C. When erosion control measures are not functioning as intended, immediately take corrective action.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT AND PAYMENT

A. All items in this section are incidental to the work and no separate payment is made for these items.

END OF SECTION 01800

SECTION 01801

FLOATING TURBIDITY CURTAIN

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing and installing a floating turbidity curtain to control sedimentation and suspended solids during underwater construction methods.

PART 2 PRODUCTS

2.1 GENERAL

A. Provide a turbidity curtain with a geotextile material curtain, floatation boom, and anchorage system.

B. Provide a woven geotextile material as approved for turbidity containment by manufacture's recommendations.

C. An acceptable floating turbidity curtain product is *Layfield Turbidity Curtains*, or approved equal. www.layfield.com, (800) 796-6868

PART 3 EXECUTION

3.1 INSTALLATION

A. Install turbidity curtain parallel to the shoreline around the construction area of disturbance. Turbidity curtain installation is required prior to any and all work below the ordinary high water mark.

B. Extend the turbidity curtain to the water body bottom at all installation locations.

C. Provide flexible flotation buoys for the top of the turbidity curtain.

D. Provide an anchorage system consisting of load lines attached to the bottom of the turbidity curtain. Place anchors every 50' connected to the top of the floatation buoy.

E. Inspect the turbidity curtain daily to ensure sedimentation is controlled and proper function of the erosion control BMP. Immediately correct turbidity curtain deficiencies before continuing with work. If turbidity curtain deficiencies are not

corrected, the Contractor may be in violation with approved construction permits and may be issued a stop work order by the Project Represent

F. Maintain turbidity curtain throughout all work activities until removal approval by the Project Representative. Allow sediment to settle or disperse for 12 hours after construction disturbance prior to removal.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Turbidity curtain will be measured and paid by the lump sum (LPSM) including all labor, equipment, materials, and incidentals required for the completion of the work.

END OF SECTION 01801

SECTION 02110

GEOTEXTILES

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 1 GENERAL

1.1 DESCRIPTION

Add the following:

This work also includes the installation of woven geotextile on the concrete cable mat boat ramp subgrade.

1.2 REFERENCES

C. Delete this section and add the following:

Provide geotextile meeting the strength requirements from Table 1.

Table 1. High Survivability Woven Geotextile Requirements

	TEST METHODS	UNITS	REQUIREMENTS
Grab Elongation	ASTM D 4632	%	>50
Grab Strength	ASTM D 4632	lbs	315
Sewn Seam Strength	ASTM D 4632	lbs	285
Tear Strength	ASTM D 4533	lbs	110
Puncture Strength	ASTM D 4833	lbs	110
Permittivity	ASTM D 4491	Sec^{-1}	≥0.02
Apparent Opening Size	ASTM D 4751	Sieve Size (in)	#30 (≤0.024)
Ultraviolet Stability (Retained Strength)	ASTM D 4355	%	≥50 after 500 hours of exposure

END OF SECTION 02110

SECTION 02112

REMOVAL OF EXISTING PAVEMENT, CONCRETE CURB, SIDEWALK, DRIVEWAY AND/OR STRUCTURES

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 1 GENERAL

1.1 DESCRIPTION

A. Add the following:

The work also consists of the removal and relocation of existing single and double post signs and barrier rocks as designated on the project drawings.

PART 3 EXECUTION

3.1 GENERAL

Add the following:

D. Remove existing signs and barrier rocks as shown in the project drawings or as directed by the Engineer. Reset salvaged signs and barrier rocks as shown in the project drawings or as directed by the Engineer.

PART 4 MEASUREMENT AND PAYMENT

Add the following:

4.3A SIGNS AND BARRIER ROCK REMOVAL AND RELOCATION

A. Signs and Barrier Rock removal and relocation will not be measured for payment and is considered incidental to other work items in this Contract.

END OF SECTION 02112

SECTION 02230

STREET EXCAVATION, BACKFILL AND COMPACTION

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 1 GENERAL

1.3 DENSITY CONTROL TESTING

A. FIELD DENSITY TESTING

Delete this section and add the following:

In-place field density tests for quality assurance are at Contractors expense meeting AASHTO T238 (ASTM D2922) and AASHTO T239 (ASTM D3017), Nuclear Densometer Methods. Quality assurance field density testing frequency is once per compacted lift, or as directed by Engineer.

Retesting of failing areas is at the expense of the Contractor.

B. LABORATORY MAXIMUM DENSITY and OPTIMUM MOISTURE

Delete this section and add the following:

Quality assurance tests will be made by the Contractors independent testing laboratory for each on-site natural soil or each source of off-site material, including borrow material, to determine the laboratory maximum density values and optimum compaction moisture content under AASHTO T99 or ASTM D698.

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

Add the following:

Obtain necessary burning permits if cleared and grubbed material is burned on site. All stumps within construction limits shall be grubbed under this contract.

3.4 EXCAVATION

Add the following:

Sheeting, Shoring, and Bracing: Except where trench banks are cut back on a stable slope, provide and maintain all sheeting, shoring, and bracing necessary to protect workers, and to protect adjoining grades and structures from caving, sliding, erosion or other damage in accordance with Occupational Safety and Health Standards (29 CFR Part 1926 – Construction Standards for Excavations), the Site Specific Health and Safety Plan, and other applicable codes and governing authorities.

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT AND PAYMENT

Delete this section and add the following:

A. CLEARING AND GRUBBING

1. Clearing and grubbing will not be measured for payment and is considered incidental to other work items in this Contract.

B. EXCAVATION AND EMBANKMENT

1. Excavation and embankment will be measured and paid by the lump sum (LPSM).

END OF SECTION 02230

SECTION 02235

CRUSHED BASE COURSE

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 2 PRODUCTS

2.3 GRADATION

Delete the entire section and replace with the following:

E. The liquid limit for that portion of the fine aggregate passing a No. 40 sieve cannot exceed 25, and the plasticity index cannot be below 3 or exceed 6, as determined by AASHTO T89 and T90.

3.3 FIELD DENSITY REQUIREMENTS

Add the following:

D. The Contractor is responsible for providing all compaction testing by an independent testing agency.

E. Compaction testing locations and frequency will be performed as follows:

Compaction Testing	**Location***	**Frequency**
Subgrade	None**	None**
Crushed Base Course	Access Road (centerline)	3
	Boat Ramp (centerline)	1
	Parking Areas	2

***** Station/Offset determined by Engineer
**Proof roll subgrade only for observation by Engineer prior to base course placement.

END OF SECTION 02235

SECTION 02236

GRAVEL LEVELING COURSE

Added Subsection.

PART 1 GENERAL

1.1 DESCRIPTION

B. This work also consists of placing clean, screened gap-graded gravel leveling course beneath push-in concrete boat ramp slab and concrete cable mat boat ramp blocks.

PART 2 PRODUCTS

2.1 GRAVEL LEVELING COURSE GRADATION

A. Furnish gravel leveling course that is crushed aggregate as shown in Table 1. The gravel leveling course must not contain other deleterious material, such as shale, alkali, mica, or soft flaky particles.

Table 1. Gravel Leveling Course Gradation

Sieve Size	Percent Passing
1”	100
3/4”	90-100
3/8”	20-55
No. 4	0-10
No. 8	0-5

PART 3 EXECUTION

3.1 PLACEMENT AND SPREADING

A. Place material to specified depth as indicated on the project drawings. Deposit and spread the material in a uniform layer and screed to make a uniform surface at the specified boat ramp grade as indicated on the project drawings.

B. Perform compaction efforts by mechanical tamping as approved by the Project Representative.

PART 4 MEASUREMENT AND PAYMENT

4.1 Gravel Leveling Course will not be measured for payment and is considered incidental to other work items in this Contract.

END OF SECTION 02236

SECTION 02238

DRAIN ROCK

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing, placing, and finishing drain rock placement at designated areas on the project drawings or as directed by the Project Representative.

PART 2 PRODUCTS

2.1 DRAIN ROCK GRADATION

A. Furnish drain rock that is rounded to sub-rounded aggregate as shown in Table 1:
B. The drain rock material must be non-plastic. A minim of 70 percent by weight of the drain rock must have at least one fractured face.

Table 1. Drain Rock Gradation

Sieve Size	Percent Passing
4 inch	100
¾ inch	0-10
No. 4	0-5

PART 3 EXECUTION

3.1 GENERAL

A. Install drain rock according to the project drawings or as directed by the Project Representative.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Drain rock placement will not be measured for payment and is considered incidental to other work items in this Contract.

END OF SECTION 02238

SECTION 02820

WOODEN RAIL FENCE

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing, erection, and placement of new wooden rail fence per the drawings and specifications.

PART 2 PRODUCTS

2.1 GENERAL

A. Wooden Posts: Posts shall be made from western larch, lodgepole pine, ponderosa pine, or douglas-fir. They shall have the bark removed, be well seasoned, sound, and straight-grained. They shall be finished round. Posts shall be **5** inch minimum diameter and **6** feet in length, or as specified in the project drawings. All posts shall be fully treated with a solution conforming to AWPA standards. Penetration shall be at least 1/2 inch. **Certification of AWPA treatment shall be provided to the Project Manager.**

B. Wooden Pole Rail: Wooden pole rails shall be made from western larch, lodgepole pine, ponderosa pine, or douglas-fir. They shall have the bark removed, be well seasoned, sound, and straight-grained. They shall be finished half round. Poles shall be **4** inch minimum diameter and **12 (maximum)** feet in length. All poles shall be fully treated with a solution conforming to AWPA standards. Penetration shall be at least 1/2 inch. **Certification of AWPA treatment shall be provided to the Project Manager.**

C. Post-Pole Hardware: Fasten poles to posts with 6” *Timberlok*® screws (or approved equal).

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

A. "Clearing" shall consist of the falling of trees greater than 3 inches diameter breast height (dbh), de-limbing them, and cutting into six-foot sections. Clearing shall also include the disposal of stumps, brush, windfalls, limbs, sticks, piles of sawdust, rubbish, debris, vegetation, and other objectionable material occurring within the clearing limits or which interfere with excavation or embankment.

B. "Grubbing" shall consist of the removal from the ground and the disposal of roots, stumps, together with duff, matter, roots, and debris from the grubbing limits.

C. Construction methods for clearing and grubbing operations are as follows:

(1) No stumps or roots shall remain more than 4 inches above the ground along the fence line.

(2) Low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain shall be removed as directed. Branches of trees extending over the fence line shall be trimmed to give a clear height of 8 feet above the ground along the fence line. Width of clearing for fence line shall be 4 feet.

3.2 FENCE INSTALLATION

A. Post holes and excavations shall be excavated on the lines established by the Engineer to the depths and cross-sections shown on the standard drawings. Wooden posts may be driven when so prepared and any damaged posts shall be repaired or rejected. Post shall be plumb when set.

B. All posthole filling and backfilling work shall be in six-inch layers and each layer shall be solidly tamped and compacted as it is placed.

C. Posts and rails that are trimmed for post and pole connection mortise detail do <u>not</u> need two coats of preservative material. All other post or rail trim, cut, and/or modification need two (2) coats of preservative material approved by the Engineer.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF MEASUREMENT AND PAYMENT

A. Wooden Rail Fence installation will be measured and paid for by the Linear Foot (LF) including all labor, equipment, materials, and incidentals required for the completion of the work.

END OF SECTION 02820

SECTION 02910

REVEGETATION

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 1 GENERAL

1.1 DESCRIPTION

Add following:

This work also includes conserving, placing, and finishing topsoil placement at designated areas on the project drawings or as directed by the Engineer.

PART 2 PRODUCTS

2.1 SEED

Add the following:

Utilize the following seed mix for all areas to be seeded.

Seed Name	% Pure Live Seed	Lbs. Per Acre
Western Wheatgrass	30	*
Bluebunch Wheatgrass	20	*
Hard Fescue	20	*
Slender Wheatgrass	15	*
Green Needlegrass	15	*

* Drilled Rate = 25 lbs/acre, Broadcast and Hydroseed Rate = 50 lbs/acre

2.2 TOPSOIL

Add the following:

Utilize all salvaged topsoil conserved from clearing and grubbing operations to cover excavation and embankment slopes prior to fertilizing, seeding, or mulching.

2.4 FERTILIZER

Delete this Section.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

Delete this section and add the following:

A. Revegetation will be measured and paid by the lump sum (LPSM) including all labor, equipment, materials and incidentals required for the completion of the work.

B. Placing conserved topsoil will not be measured for payment and is considered incidental to other work items in this Contract.

END OF SECTION 02910

SECTION 02930

SIGNING

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing and placement and/or removal and reset of signs and sign posts at designated areas on the project drawings or as directed by the Engineer. This work also consists of the mounting and complete installation of FWP supplied signing at designated areas on the project drawings or as directed by the Engineer.

PART 2 PRODUCTS

2.1 WOOD POSTS

A. Furnish posts from dry no. 1 grade Douglas fir, southern or Ponderosa pine, hemlock, spruce, or western larch conforming to AASHTO M 168. Treat the posts with water-borne preservative ACA, ACZA, or CCA according to AWPA Standard C14 except the minimum preservative retention is 0.40 pounds per cubic foot.

2.2 HARDWARE

A. Furnish galvanized steel or aluminum alloy material for lag screws, washers, clip angles, wood screws, shear plates, U-bolts, clamps, bolts, nuts, and other fasteners.

PART 3 EXECUTION

3.1 GENERAL

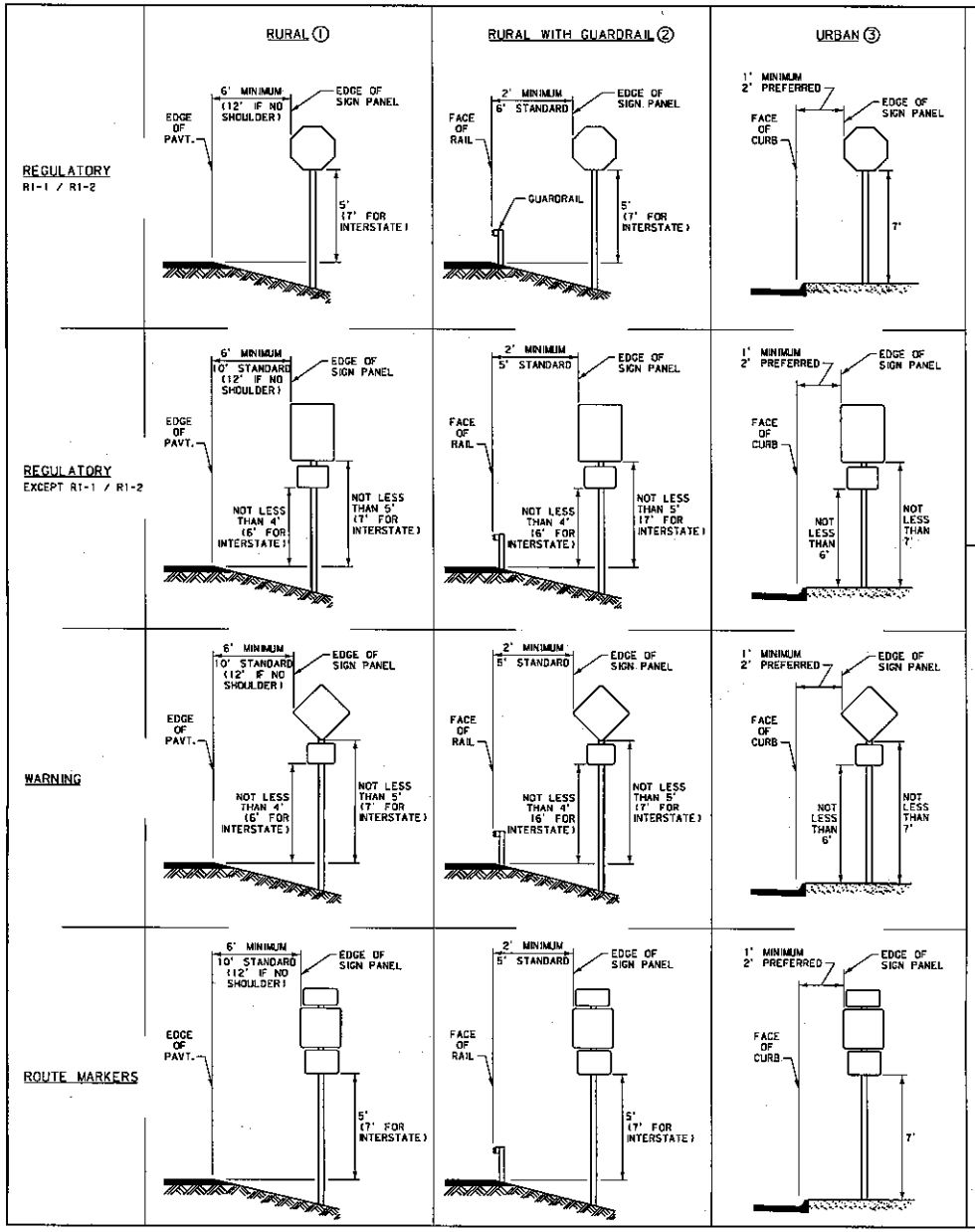
A. Sign locations may be changed to fit field conditions as approved by the Engineer. Determine sign support lengths measured from the top of the sign to bottom of the footing. Backfill signs supports and post by tamping with hand tools and/or mechanical equipment. Install sign supports according to the project drawings or as directed by the Engineer.

PART 4 MEASUREMENT AND PAYMENT

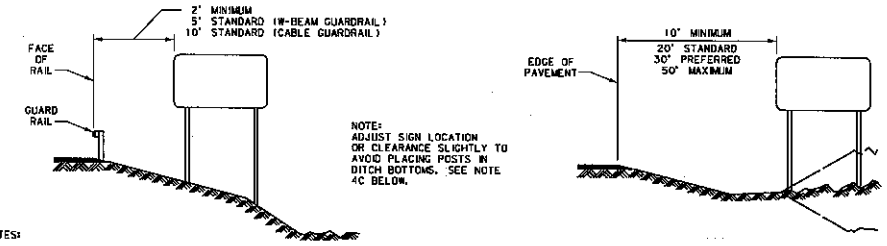
4.1 PAYMENT

A. Sign post and panel installation (FWP supplied sign panels) will be measured and paid for by the each (EACH).

END OF SECTION 02930



GUIDE SIGNS



NOTES:

1. PLACE ALL SIGNS AT THE CLEARANCE AND MOUNTING HEIGHTS SHOWN.
2. FOR REGULATORY, WARNING AND ROUTE MARKER SIGNS, AND THEIR ASSEMBLIES, ON HIGHWAYS OTHER THAN INTERSTATE:
   A) USE DIAGRAMS LOCATED IN COLUMN ① WHEN PLACING THESE SIGNS IN STANDARD RURAL CONDITIONS. USE COLUMN ② WHEN PLACING THESE SIGNS BEHIND GUARDRAIL IN RURAL CONDITIONS. USE COLUMN ③ WHEN PLACING THESE SIGNS IN URBAN CONDITIONS WHERE THERE IS ADEQUATE CLEARANCE AND SIDEWALK WIDTH.
   B) WHERE SIDEWALK WIDTH IS LIMITED IN URBAN CONDITIONS, SEE DTL. DWG. NO. 619-16 FOR PLACEMENT DETAILS.
3. FOR REGULATORY (ALL OTHER), WARNING AND ROUTE MARKER SIGNS, AND THEIR ASSEMBLIES, ON INTERSTATE HIGHWAYS:
   THE CLEARANCE IS 20' FROM THE EDGE OF PAVEMENT IN COLUMN ① FOR STANDARD RURAL CONDITIONS. THE CLEARANCES LISTED IN COLUMNS ② AND ③ REMAIN AS SHOWN.
4. FOR GUIDE SIGNS AND THEIR ASSEMBLIES:
   A) USE THE DIAGRAMS LOCATED ABOVE WHEN PLACING THESE SIGNS IN THE GIVEN RURAL CONDITIONS.
   B) FOR PLACEMENT OF THESE SIGNS IN URBAN CONDITIONS, SEE THE SIGN LOCATION AND SPECIFICATION SHEETS IN THE SIGNING PLANS FOR EACH INDIVIDUAL SIGN.
   C) THE MAXIMUM CLEARANCE OF THESE SIGNS IS 50' IN ANY CONDITION.
   D) SEE DTL. DWG. NO. 619-08 FOR MOUNTING HEIGHTS.
5. WITHIN THE CITY LIMITS OR IN A SIDEWALK AND CURB AREA, MOUNT SIGNS TO HAVE THE PROPER CLEARANCES, BUT AVOID ANY CONFLICT BETWEEN THE POST AND THE MAIN WALKING AREA OF THE SIDEWALK, OR WITH DOORWAYS OR WINDOWS OF ADJACENT BUILDINGS. THE EXACT LOCATION OF THESE SIGN INSTALLATIONS WILL BE DETERMINED BY THE ENGINEER. SEE DTL. DWG. NO. 619-18 FOR VARIOUS CANTILEVER TYPE MOUNTINGS.
6. EVALUATE SIGNS WITHIN CLEAR ZONES (TABLES BELOW) FOR SUPPORT BREAKAWAY REQUIREMENTS (CONTACT MDT TRAFFIC SECTION FOR CRITERIA).

CLEAR ZONE DISTANCES

(IN FEET FROM EDGE OF DRIVING LANE)

DESIGN SPEED	DESIGN ADT	FILL SLOPES			CUT SLOPES		
		6:1 OR FLATTER	5:1 TO 4:1	3:1	3:1	4:1 TO 5:1	6:1 OR FLATTER
40 MPH OR LESS	UNDER 750	7-10	7-10	**	7-10	7-10	7-10
	750-1499	10-12	12-14	**	10-12	10-12	10-12
	1500-6000	12-14	14-16	**	12-14	12-14	12-14
	OVER 6000	14-16	16-18	**	14-16	14-16	14-16
45-50 MPH	UNDER 750	10-12	12-14	**	8-10	8-10	10-12
	750-1499	12-14	16-20	**	10-12	12-14	14-16
	1500-6000	16-18	20-26	**	12-14	14-16	16-18
	OVER 6000	18-20	24-28	**	14-16	18-20	20-22
55 MPH	UNDER 750	12-14	14-18	**	8-10	10-12	10-12
	750-1499	16-18	20-24	**	10-12	14-16	16-18
	1500-6000	20-22	24-30	**	14-16	16-18	20-22
	OVER 6000	22-24	26-32 *	**	16-18	20-22	22-24
60 MPH	UNDER 750	16-18	20-24	**	10-12	12-14	14-16
	750-1499	20-24	26-32 *	**	12-14	16-18	20-22
	1500-6000	26-30	32-40 *	**	14-18	18-22	24-26
	OVER 6000	30-32 *	36-44 *	**	20-22	24-26	26-28
65-70 MPH	UNDER 750	18-20	20-26	**	10-12	14-16	14-16
	750-1499	24-26	28-36 *	**	12-16	18-20	20-22
	1500-6000	28-32 *	34-42 *	**	16-20	22-24	26-28
	OVER 6000	30-34 *	38-46 *	**	22-24	26-30	28-30

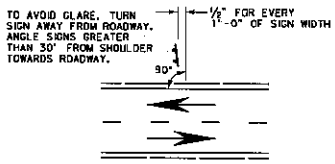
* WHEN AN INVESTIGATION OR ACCIDENT HISTORY INDICATES A HIGH PROBABILITY OF ACCIDENTS, CLEAR ZONE DISTANCES GREATER THAN 30' MAY BE PROVIDED AS INDICATED. CLEAR ZONES MAY ALSO BE LIMITED TO 30' TO PROVIDE A CONSISTENT ROADWAY TEMPLATE WHEN EXPERIENCE WITH PREVIOUS SIMILAR PROJECTS INDICATES SATISFACTORY PERFORMANCE.

** FIXED OBJECTS, INCLUDING SIGN POSTS, SHOULD NOT BE ALLOWED IN THE VICINITY OF THE TOE OF THESE SLOPES. SEE AASHTO ROADSIDE DESIGN GUIDE FOR ADDITIONAL CONSIDERATIONS IN LOCATING SIGNS.

HORIZONTAL CURVE ADJUSTMENTS

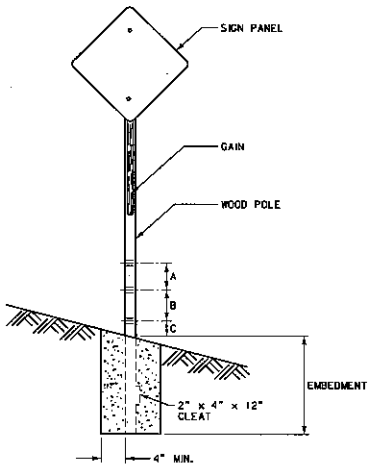
(APPLICALBLE ON OUTSIDE OF CURVE ONLY)

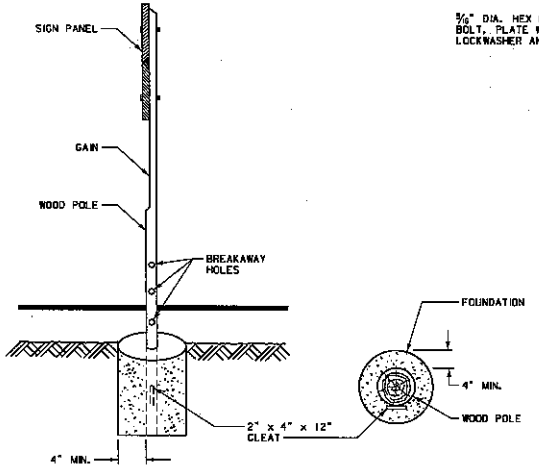
RADIUS (FT)	DESIGN SPEED (MPH)						
	40	45	50	55	60	65	70
2860	1.1	1.1	1.1	1.2	1.2	1.2	1.3
2290	1.1	1.1	1.2	1.2	1.2	1.3	1.3
1910	1.1	1.2	1.2	1.2	1.3	1.3	1.4
1640	1.1	1.2	1.2	1.3	1.3	1.4	1.5
1430	1.2	1.2	1.3	1.3	1.4	1.4	
1270	1.2	1.2	1.3	1.3	1.4	1.5	
1150	1.2	1.2	1.3	1.4	1.5		
950	1.2	1.3	1.4	1.5	1.5		
820	1.3	1.3	1.4	1.5			
720	1.3	1.4	1.5				
640	1.3	1.4	1.5				
570	1.4	1.5					
380	1.5						



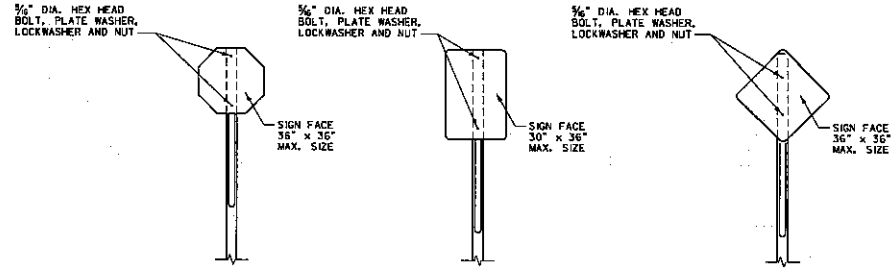
SKEW DIAGRAM

DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 619	DWG. NO. 619-00
SIGN CLEARANCES AND MOUNTING HEIGHTS	
EFFECTIVE: APRIL 2006	
MONTANA DEPARTMENT OF TRANSPORTATION	





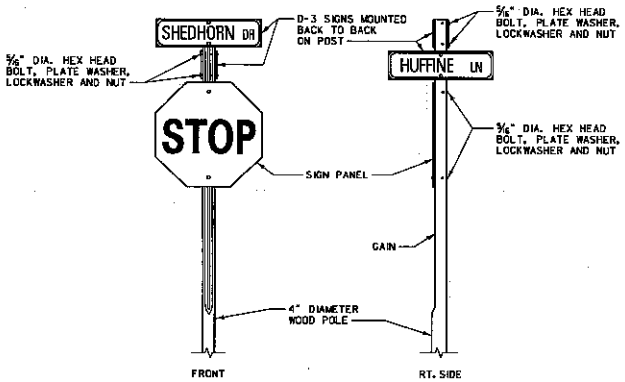
BREAKAWAY AND FOOTING DETAILS



REGULATORY SIGNS

WARNING SIGNS

TYPICAL SIGN MOUNTINGS
(NO BACKBRACING)

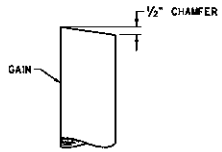


NOTES:

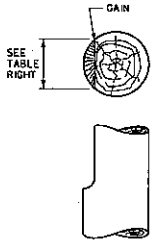
THE COST FOR MOUNTING D-3 SIGNS IS ABSORBED IN OTHER BID ITEMS OF THE CONTRACT.

REFER TO FHWA'S "STANDARD HIGHWAY SIGNS" FOR D-3 STREET NAME SIGN TYPICAL LAYOUT.

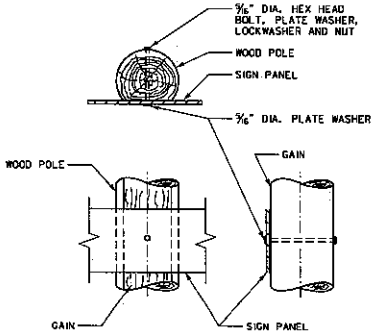
STREET NAME SIGN INSTALLATION



TOP END TREATMENT



GAIN DETAIL



SIGN MOUNTING DETAIL

NOTES:

CONFORM ALL WOOD POLES TO THE REQUIREMENTS OF SECTION 704 OF THE STANDARD SPECIFICATIONS.

GAIN ALL POLES ON THE SIGN SIDE THE MINIMUM WIDTH SHOWN IN THE TABLE, FOR HALF THE LENGTH OF EACH POLE.

BREAKAWAY DETAILS ARE STANDARD FOR ALL WOOD POLES LISTED IN THE TABLE, ON SINGLE AND MULTIPLE SIGN SUPPORTS.

ALL BOLTS, NUTS AND WASHERS MUST CONSIST OF ALUMINUM, STAINLESS STEEL OR CADMIUM PLATED STEEL MATERIAL.

ATTACH A 2" x 4" x 12" BOARD 12" FROM THE BOTTOM OF THE POLE TO PREVENT SPINNING. ATTACH THIS CLEAT BY DRIVING TWO 16d NAILS THROUGH THE CLEAT AND INTO THE POLE. TREAT THE 2" x 4" CLEAT ACCORDING TO THE STANDARD SPECIFICATIONS.

⊗ THE MAXIMUM CROSS-SECTIONAL AREA AT A POINT 4" ABOVE GROUND LEVEL MAY NOT EXCEED 24 SQUARE INCHES EXCLUSIVE OF DRILLED BREAKAWAY HOLES FOR UNPROTECTED POST INSTALLATIONS. THE HOLE DIAMETER MAY BE ENLARGED IF NECESSARY TO INSURE THIS REQUIREMENT IS MET.

USE SOIL CEMENT FOR THE FOUNDATION - SEE SECTION 619.03.3 OF THE STANDARD SPECIFICATIONS.

FOR SIGNS REQUIRING BACKBRACING, CONSULT DTL. DWG. NO. 619-21 AND 619-22 FOR BACKBRACING OPTIONS AND DETAILS.

MUST BE PROTECTED OR OUT OF CLEAR ZONE

POLE SIZE	A	B	C	HOLE DIA. (SEE NOTE ⊗)	EMBEDMENT	GAIN
3" TOP DIA.	~	~	~	~	3'-0"	2¾"
4" TOP DIA.	~	~	~	~	3'-0"	3½"
5" TOP DIA.	~	12"	4"	2"	3'-6"	4"
6" TOP DIA.	~	12"	4"	2½"	4'-6"	4"
CLASS 4	~	12"	4"	2"	5'-0"	4"
CLASS 3	~	12"	4"	2½"	5'-6"	4"
CLASS 2	6"	6"	4"	2"	6'-0"	4"
CLASS 1	6"	6"	4"	2½"	6'-6"	4"

DETAILED DRAWING

REFERENCE STANDARD SPEC. SECTION 619.704

DWG. NO. 619-20

TREATED WOOD POLE SIGN MOUNTING AND SUPPORT DETAILS

EFFECTIVE: FEBRUARY 2005

MONTANA DEPARTMENT OF TRANSPORTATION

SECTION 03310

STRUCTURAL CONCRETE

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 1 GENERAL

1.1 DESCRIPTION

Add the following:

B. FWP will provide a grooving tool(s) for producing a grooved finish on the concrete surface. The tool(s) provided by FWP shall be returned cleaned. The finishing tool surfaces shall be free of hardened concrete and in good condition. A cleaning cost of $250.00 will be retained if the tool(s) are returned not cleaned or poorly cleaned. Additional costs for repair or replacement of damaged tools may also be retained.

PART 2 PRODUCT

2.1 CLASSIFICATION

Add the following to Subsection A.1:

1. Use M-4000 concrete for all boat ramp concrete.

PART 3 EXECUTION

3.4 PLACING CONCRETE

A. Delete the last sentence.

Add the following:

B. Provide written and/or verbal communication notice to the Project Manager three (3) working days, excluding Saturday and Sunday, prior to any project concrete pour, regardless of pour quantity. For clarification, all written communication notices have to received in the FWP Design and Construction Office per this requirement. Failure to provide notification will result in a deduct of pour quantity from the associated bid item. Lump sum bid items will be deducted based on the concrete placed percentage.

3.4A CONCRETE V-GROOVE FINISHING

A. Required Accuracy

1. The Contractor shall construct all specified work as shown on the project drawings within the specified tolerances, shown in Table 1. The following are reasonable tolerances that allow for a maximum specified deviation which may occur in the field during construction. Deviations beyond any values listed below may result in reduction in payment, or rejection, in part due to poor aesthetics, loss of functionality, or does not meet desired design criteria.

2. If the Contractor fails to meet specified tolerances, that portion of the work area, as specified below, may be reduced in payment or rejected, removed and replaced in accordance with General Conditions, ARTICLE 12 – UNCOVERING AND CORRECTION OF WORK.

Table 1. V-Groove Finish Tolerances

Criteria	**Tolerance**
V-Groove Angle Orientation	10 degrees
V-Groove Depth	0.25”
V-Groove Connections (End to End Alignment)	0.5”

B. Concrete V-Groove Finish

1. Provide a v-groove finish on all ramp surfaces as shown in the project drawings or directed by the Project Representative. Provide adequate laborers to begin concrete v-groove finish during concrete placement. Timing of v-grooving finish is critical.

2. Factors that may influence the v-groove finish and concrete performance include air content, water content, add-mixtures and strength. Some Contractors delay starting the finish, or may have a tendency to add water to the concrete surface, in order to achieve a “perfect” ramp finish. This must be avoided, as significant amounts of water in the surface layer will result in weak strength of the v-grooves, which at best contain less quantity of large aggreagate due to the nature of the finish process. Refer to the Technical Specifications for other influential factors including, but not limited to: mix design, mixing and placement time, weather, correct placement of rebar, and correct thickness of ramp.

C. V-Groove Rating Score

1. The following rating score shall be used to determine allowable tolerances for all v-groove concrete finishes. The Project Representative shall make the final determination on any deficient or unacceptable area, determine the rating score, and conduct measurements as deemed necessary for evaluation. Three

(3) v-grooving evaluation criteria will be considered in determining the rating score including: appearance; angle orientation; and depth. A criteria rating score will be assigned for each based on the V-Groove Rating System, shown in Table 2. An overall, or final, rating score is made by averaging the three criteria rating scores. Finalrating scores will be rounded to the nearest whole number.

Rating Score

1 Unacceptable, Contractor shall replace that portion of the ramp.
2 Poor, Reduction of 50% in payment for that portion of the ramp, or Contractor shall replace that portion of the ramp.
3 Fair, Minimum acceptance range.
4 Good.
5 Excellent, Letter of commendation to Contractor.

Table 2. V-Groove Evaluation Rating System

Evaluation Criteria	Criteria	Area	Score
V-Groove Appearance (top or bottom of groove)	Shallow, Uneven, Rough, Torn	40+ sf	-5
	Rounded, Flat, Semi-Rough	80+ sf	0
	Sharp, Crisp, Clean, Smooth		5
V-Groove Angle Orientation	0-5 or >56 degrees	40+ sf	1
	6-10 or 51-55 degrees	40+ sf	2
	11-15 or 46-50 degrees	80+ sf	3
	16-24 or 41-34 degrees	80+ sf	4
	25-35 degrees		5
V-Groove Depth	0.00” to 0.20”	40+ sf	1
	0.21” to 0.40”	40+ sf	2
	0.41” to 0.50”	80+ sf	3
	0.51” to 0.60”	80+ sf	4
	0.61” to 0.75”		5

3.4 TESTING

A. 3. Compression Tests

Add the following to subsection a.:

Mold a minimum of three (3) field cure cylinders (6-inch diameter), for each day of concrete placement. Follow requirements for field curing and strength testing found in this section.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

Add the following:

B. Cast-in-Place Concrete ADA Parking Slab will be measured and paid for by the square foot (SF) in place including all labor, equipment, materials, and incidental required for the completion of the work.

C. Cast-in-Place Concrete Sidewalk will be measured and paid for by the square foot (SF) in place including all labor, equipment, materials, and incidental required for the completion of the work.

END OF SECTION 03310

SECTION 03321

CURB STOPS

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing and placement of curb stops at designated areas on the project drawings or as directed by the Project Representative. This work also includes removing and resetting existing curb stops as directed by the Project Representative.

PART 2 PRODUCTS

1.1 CURB STOPS

A. Furnish pre-fabricated concrete curb stops (84" min. length) as designated on the project drawings or as directed by the Project Representative.

PART 3 EXECUTION

3.1 GENERAL

A. Install curb stops at locations as designated on the project drawings or as directed by the Project Representative. Furnish and place No. 5 rebar measuring 3 feet in length to hold curb stops in place. Drive rebar flush with the top of each curb stop.

PART 4 MEASUREMENT AND PAYMENT

4.1 PAYMENT

A. Curb stops will be measured and paid for by the each (EACH).

END OF SECTION 03321

SECTION 03350

CONCRETE CABLE MAT

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of the installation of pre-fabricated concrete cable mat block materials at designated areas on the project drawings or as directed by the Project Representative.

PART 2 PRODUCTS

2.1 GENERAL

A. For interior blocks, furnish Concrete Cable Mat meeting the requirements of Class 50, 6" thick open cell block, ArmorFlex® or approved equal. For exterior blocks, furnish Concrete Cable Mat meeting the requirements of Class 55, 6" thick closed cell block, ArmorFlex® or approved equal.

ArmorFlex® products can be purchased through:

Contech Construction Products
2905 N. Montana, Suite 203
PO Box 5478
Helena, MT 59604
406-431-1082

PART 3 EXECUTION

3.1 PREPARATION

A. Excavate ramp to the lines and grades as shown on the project drawings.

B. Place, spread, and level gravel leveling course to the dimensions shown in the plans and per Section 02236.

C. Place and secure geotextile per Section 02110.

3.2 PLACEMENT

A. Place cable mats using bars and other means to ensure proper interlocking. Take up slack in the cable and secure by tying to the ramp steel reinforcing or by clamping with cable clamps.

B. Spread gravel leveling course to fill voids between and in blocks to secure in place. Backfill over sloped outside edges of cable concrete with conserved excavation. Backfill any over excavation at the lower end of the mat with conserved excavation.

C. Mat construction and connections to be as per manufacturer's directions.

D. Backfill over buried ends and sides of the mat shall be from conserved excavation.

3.3 TOLERANCES

A. The finished surface of the concrete block mat shall not vary from the staked grade more than 3 inches.

B. Variation of elevation from side to side at any one station shall be 2.5 inches or less.

C. Total distance of level surface between the start of roll off on each side shall vary from the specified width by no more than 6 inches.

D. The intent is for the top of the cable concrete mat to match as closely as possible to the gravel ramp surface and the existing lake bottom contours.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Concrete cable mat placement will be measured and paid for by the square foot (SF) including all labor, equipment, materials, and incidentals required for the completion of the work.

END OF SECTION 03350

SECTION 99999

PRE-CAST CONCRETE VAULT LATRINE

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of site preparation (excavation and leveling), backfilling and compaction, and landscaping for Fishing Access Site (FAS) pre-cast concrete vault latrines at designated areas on the project drawings or as directed by the Project Representative.

PART 2 PRODUCTS

2.1 MATERIALS

A. Pre-Cast Concrete Vault Latrine.

1. Montana Department of Fish, Wildlife and Parks will supply the latrine through Flathead Concrete, Kalispell, MT. The contractor shall coordinate the delivery with Flathead Concrete. The contractor is advised to contact **Flathead Concrete (406)-752-4259,** as soon as a schedule is established to insure delivery in a timely manner.

B. Gravel Bedding for Latrine.

1. See Subsection 02235

PART 3 EXECUTION

3.1 GENERAL

Each latrine location shall be staked in the field by the Project Representative. Refer to the project drawings for pre-cast concrete vault toilet installation locations, details, and dimensions.

3.2 EXCAVATION

Excavate for the installation of the toilet vault to a depth that will allow the structure site to be free draining after installation is completed. Salvage conserved topsoil.

3.3 FINISH FLOOR ELEVATION

Finish floor elevation shall be a minimum of 4 to 6 inches above natural grade measured at the front entrance.

3.4 COMPACTION OF EARTH UNDER TOILET VAULTS

Prior to installation of the toilet building, compact the natural ground underlying the vault with a minimum of three passes with a whacker-type mechanical tamper or equivalent approved by the Project Representative.

3.5 INSTALLATION OF GRAVEL BEDDING UNDER TOILET VAULTS

Install 12 inches of compacted gravel bedding material for leveling course. Compact leveling course with one pass with a whacker-type mechanical tamper or equivalent approved by the Project Representative. Grade level course so there will be no high spots in middle of vault bottom. Finished leveling course shall not vary more than 0.01 foot for the four corners of the vault.

3.6 BACKFILL AND DISPOSAL OF DEBRIS

Backfill around structures, including under exterior slab. Use excavated material for backfill except that rocks larger than six inches in maximum dimension shall not be placed within six inches of exterior of vault walls. Stumps, roots, brush, and other vegetation shall be removed from the site and disposed of in a legal manner by the contractor.

3.7 COMPACTION UNDER ENTRANCE SLAB

Fill under entrance slab shall have excavated material placed in six-inch loose lifts, and compacted with a minimum of two passes with a whacker-type mechanical compactor or equivalent approved by the Project Representative.

3.8 FILL AROUND LATRINES AND SLAB

Spread excess excavated material from vault around structure. Final backfill surface shall be flush with the top of the front slab. Allowance shall be made for the depth of the topsoil. Grade backfill away from structure at maximum slope of five percent unless otherwise noted in the plans or specs or approved by the Project Representative.

3.9 LANDSCAPING

Spread conserved topsoil as final 2" layer after rough grading is completed. Areas disturbed by excavation, backfilling, and stockpiling of excavated materials shall be hand raked to removed exposed rocks over one-inch in maximum dimension. Oversize rocks removed from the surface shall be disposed of off-site or with the approval of the Project Representative used as fill in other items in the contract.

3.10 HIDDEN GROUND CONDITION

If the contractor uncovers bedrock, boulders too big to remove, ground water or other unexpected conditions, he shall immediately contact the Project Representative for instructions.

3.11 TEMPORARY FENCING

A. All excavations left open overnight shall be fenced with polyethylene plastic safety fence, orange color, 48" high, and 4" maximum mesh openings. Fencing shall be secured to steel posts on the side away from the excavation unless otherwise approved in advance by the Project Representative.

1. The bottom of the fence shall generally follow the contour of the ground.

2. Maximum spacing of the steel posts shall be ten feet.

B. No excavations will be left open more than seven days unless otherwise approved by the Project Representative.

3.12 PATHWAYS

A. Construct a pathway between each latrine installation and the adjacent roadway or parking area. Requirements of each pathway are as follows:

1. Utilize compacted pea gravel for all pathway surfaces, unless otherwise specified on the project drawings.

2. Construct pathways that follow existing ground contours as much as possible. Limit excessive excavation and embankment.

3. Cross slopes on the pathway shall be 1%.

4. The running slope of the pathway shall not exceed 5%.

5. Slopes will be checked using a 3' level.

6. Ridges or other sudden changes in slope shall not exceed of 1/2". The top surface of the path shall match the top surface of the Vault Latrine Slab within 1/2".

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. FAS Latrine Installations will be measured and paid for by the Lump Sum (LPSM) including all labor, equipment, materials, and incidentals required for the completion of the work.

END OF SECTION 99999